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# World Trade in Major U.S. Crops

## A Market-Share Analysis

Alan J. Webb



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<b>17. Document Analysis</b> <table> <tr> <td><b>a. Descriptors</b></td> <td></td> <td></td> </tr> <tr> <td>Agricultural products</td> <td>International trade</td> <td>Transportation</td> </tr> <tr> <td>Analysis</td> <td>Natural resources</td> <td>Weather</td> </tr> <tr> <td>Commerce</td> <td>Policies</td> <td></td> </tr> <tr> <td>Economic conditions</td> <td>Tariff</td> <td></td> </tr> <tr> <td><b>b. Identifiers/Open-Ended Terms</b></td> <td></td> <td></td> </tr> <tr> <td>Crops</td> <td>Transportation costs</td> <td></td> </tr> <tr> <td>Export</td> <td>U.S. products</td> <td></td> </tr> <tr> <td>Import</td> <td>World trade</td> <td></td> </tr> <tr> <td>Market-share analysis</td> <td></td> <td></td> </tr> <tr> <td><b>c. COSATI Field/Group</b></td> <td>02-B, 05-C</td> <td></td> <td></td> </tr> </table>					<b>a. Descriptors</b>			Agricultural products	International trade	Transportation	Analysis	Natural resources	Weather	Commerce	Policies		Economic conditions	Tariff		<b>b. Identifiers/Open-Ended Terms</b>			Crops	Transportation costs		Export	U.S. products		Import	World trade		Market-share analysis			<b>c. COSATI Field/Group</b>	02-B, 05-C		
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CONTENTS		Page
SUMMARY.....		v
INTRODUCTION.....		1
SOYBEANS.....		2
Exporters.....		2
Importers.....		6
Factors Affecting Future U.S. Soybean Exports.....		8
COARSE GRAINS.....		9
Corn Exporters.....		9
Corn Importers.....		12
Exporters of Other Coarse Grains.....		15
Importers of Other Coarse Grains.....		17
Factors Affecting Future U.S. Coarse Grains Exports.....		19
WHEAT.....		20
Exporters.....		20
Importers.....		23
Factors Affecting Future U.S. Wheat Exports.....		27
COTTON.....		28
Exporters.....		28
Importers.....		31
Factors Affecting Future U.S. Cotton Exports.....		33
RICE.....		34
Exporters.....		34
Importers.....		37
Factors Affecting Future U.S. Rice Exports.....		38
CONCLUSIONS.....		39

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## SUMMARY

The United States captured a rising share of expanding world food import markets in the seventies, with the advantages of rapid expansion in farm output, adequate transport capacity for moving rising export volumes to market, and the price-competitive effects of U.S. dollar devaluation.

World import demand for food will continue to grow in the eighties, subject to national farm and food policies that distort price signals on world markets. Western developed countries that protect farm prices may stimulate their own output artificially and limit import demand. Developing or centrally planned countries that hold down consumer food prices may cause the opposite distortions.

The future competitiveness of U.S. agricultural exports will depend on our ability to develop lower cost farm production technologies and organizational methods, obtain favorable tariff treatment in importing countries, and effectively market U.S. products.

Achieving lower cost farm production will require increased commitments to agricultural research and productivity-increasing investments in land, labor, capital, and energy resources.

In addition to these overall determinants of future competitiveness, prospects for leading export commodities will continue to depend on factors unique to the world market for each. An analysis of changes since 1960 in world market shares of five major U.S. farm export commodities suggests key factors likely to govern their future performance.

U.S. soybeans and coarse grain exports have increased sharply in the last two decades with the growth of livestock industries in developed, centrally planned, and middle-income developing countries.

U.S. soybeans held 86 percent of the world market in 1978. Maintaining this share will be important, but not critical so long as total oilseed import demand continues to grow with rising demand for livestock products.

U.S. coarse grains, principally corn, accounted for about 70 percent of world exports in 1979, up from about half two decades before. Continued growth of the world coarse grains market will depend on expansion of U.S. crop output, response of U.S. competitors, imports by centrally planned countries, and growth in the world's real income. However, land limitations will curtail the pace of increasing U.S. coarse grain output in the eighties. Countries with large amounts of uncultivated land

(such as Argentina and Brazil) may be able to capture a greater share of the world coarse grain market if higher world grain prices make expansion profitable.

Wheat and rice import demand has increased less rapidly than that for feedstuffs because food grain demand increases more slowly with income. The United States, the world's leading wheat exporter, held 41 percent of the export market in 1975-79. No single exporter dominates the rice market, although the United States and Thailand were the top exporters in 1975-79, each holding a fifth of the market.

Government policies insulate domestic wheat and rice markets in many countries from the effects of price competition on the world market. Nonetheless, the U.S. shares of these markets should remain steady or increase slightly in the near future.

Cotton exports have grown substantially since 1960 as textile industries in Asian countries have expanded rapidly; the U.S. provides one-third of world exports. Higher oil prices have made cotton more competitive with petroleum-based synthetic fibers. At current prices, the United States is projected to continue for the next few years to have larger quantities of cotton for export and should thereby be able to maintain or add to its leading position.

# **World Trade in Major U.S. Crops: A Market-Share Analysis**

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## **INTRODUCTION**

This report explains the competitive forces that reinforced our position as the leading exporter of farm products during the past 20 years. In general terms, it provides an understanding of the leading exporting and importing countries for the chief export commodities, and discusses how the policies of these countries have affected farm trade.

This understanding, in turn, provides an insight into the forces that will determine the future position of the United States as an agricultural exporter. Our farm exports have grown so rapidly in recent years that continued growth is expected without question. Yet, this report shows plainly that our place as the leading food exporter is assured only so long as our farm products remain competitive with those of other food-exporting nations.

World trade in agricultural commodities tripled between 1970 and 1978--the latest year for which data are available--from \$51.6 billion to \$169.2 billion. U.S. farm exports, meanwhile, quadrupled from \$7.4 billion to \$30.8 billion, boosting the U.S. market share from 14.3 to 18.2 percent of world agricultural trade.

Five agricultural commodities and their products were responsible for two-thirds of the value of U.S. agricultural exports in 1978. They were soybeans and soybean products, 23 percent; coarse grains, 19 percent; wheat and flour, 15 percent; cotton, 6 percent; and rice, 3 percent. Based on trade value, U.S. exports constituted 80 percent of world raw soybean trade, 72 percent of the world's coarse grains exports, and 45, 40, and 20 percent of the exports on the international wheat, cotton, and rice markets, respectively.

This report examines the export market shares of the United States and its major competitors for these five commodities, as well as the import market shares accounted for by the major importers, and briefly discusses significant factors contributing to changes in export and import shares over the last 20 years. The discussion of export and import policies, weather conditions, economic trends, and other influencing elements is commodity- and country-specific.

## SOYBEANS

Current market shares are represented by a 5-year average based on the July-June 1975/76-1979/80 marketing years, in order to avoid the distortions that might result from selecting only the most recent year. There are two exceptions. First, data for cotton were available only on an individual country crop-year basis. 1/ Second, soybean data limitations restricted share calculations to calendar years 1960 through 1978 and to current 1975-78 4-year average shares.

## SOYBEANS

Two joint products, meal and oil, are derived from soybeans. Soybean meal competes with fishmeal and meals derived from other oilseeds such as peanuts, cottonseed, sunflower seed, copra, rapeseed, and palm kernels. Soyoil is a substitute for oil derived from all the other oilseeds, as well as for animal and marine fats such as butter, lard, and fish oil. Soybeans currently account for roughly 75 percent (in 44-percent soybean meal equivalent) of world protein meal trade, an increase from about half in the late sixties.2/ Soyoil increased from a 30-percent share of the world trade in fats and oils in 1960 to a 40-percent share in 1978.3/

## Exporters

The United States exported 81 percent of all soybeans traded in 1975-78 (table 1), 40 percent of the meal (table 2), and 32 percent of the oil (table 3). Brazil ranked second to the United States, with 14 percent of the soybean market, 39 percent of the meal market, and 23 percent of the oil market. Argentina had shares of less than 3 percent in all three markets, and the People's Republic of China (PRC) had only a fraction of a percent of world trade.

World trade in soybeans and soybean products has changed radically since 1960. The U.S. share of world soybean trade averaged about 90 percent in the late sixties and early seventies with the remainder of the market divided between

1/ As a result, the aggregation of total cotton exports and imports used to calculate market shares occurs over incongruent time periods. This may result in a slight distortion of market shares, but the relative rank of importers and exporters should remain the same. Of greater importance in this analysis is the observation of country-share changes over time, which should not be affected by the different country accounting periods.

2/ Protein meals in trade include meal from soybeans, fish, peanuts, sunflower seed, cottonseed, linseed, rapeseed, sesame seed, safflower, copra, and palm kernels.

3/ Includes oil from all of the oil-bearing products listed in footnote 2 plus oil from olives, corn, babassu, castor beans, citicica (a type of palm kernel), tung nuts, butter, lard, tallow and greases, and whales.

Table 1--World soybean exports: Volume shares of leading exporters

Calendar year	: United : States	: Brazil	: PRC	: Argentina	: Other
:	:	:	:	:	:
1960	: 76.2	0.2	21.1	--	2.5
1961	: 87.0	1.7	8.0	--	3.3
1962	: 88.8	2.0	6.9	--	2.3
1963	: 91.0	.6	6.4	--	2.0
1964	: 90.7	--	7.9	--	1.4
1965	: 88.8	1.1	8.3	--	1.8
1966	: 89.0	1.6	7.3	--	2.1
1967	: 88.0	3.7	6.9	--	1.4
1968	: 91.5	.8	6.5	--	1.2
1969	: 90.8	3.3	5.2	--	.7
1970	: 93.8	2.3	3.3	--	.6
1971	: 93.8	1.7	3.7	--	.8
1972	: 86.8	7.5	2.7	--	3.0
1973	: 86.2	11.6	.2	--	2.0
1974	: 82.4	16.2	--	0.3	1.1
1975	: 75.9	20.3	1.8	.5	1.5
1976	: 77.8	18.5	.9	.4	2.4
1977	: 81.1	13.0	.6	3.1	2.2
1978	: 86.3	2.7	.4	8.3	2.3
1975-78 average	: 80.5	13.7	.9	3.1	2.1
:					

-- = Negligible.

Sources: Foreign Agriculture Circular (Oilseeds and Products), various issues, Foreign Agricultural Service, United States Department of Agriculture. Trade Yearbook, various issues, Food and Agriculture Organization of the United Nations.

Brazil and the PRC. The PRC has ceased to be a significant exporter, whereas Brazil, and recently Argentina and Paraguay, have begun carving out larger shares of the expanding market.

The trends of world total, U.S., and combined Brazilian and Argentine exports in figure 1 implicitly show the changes in market shares. Figure 1 also illustrates the fourfold increase in the size of the total world soybean market since 1960. The absence of soybean import restrictions, along with high levies on alternative feed rations and the rising consumer demand for livestock products, have resulted in a rapid growth in soybean purchases by the nine European Community (EC) members and Japan which imported 48 and 18 percent, respectively, of world soybean trade in 1978.

Table 2--World soymeal exports: Volume shares of leading exporters

Calendar year :	United States :	Brazil :	Argentina :	Other 1/
:	:		:	:
1960	: 47.2	--	--	52.8
1961	: 51.9	3.0	--	45.2
1962	: 61.8	2.9	--	35.3
1963	: 66.2	3.0	--	30.8
1964	: 67.5	2.9	--	30.7
1965	: 69.9	3.7	--	26.3
1966	: 72.9	5.9	--	21.2
1967	: 73.3	3.7	--	23.0
1968	: 72.0	6.3	--	21.8
1969	: 71.3	7.0	--	21.7
1970	: 68.4	9.8	--	21.8
1971	: 66.0	14.7	--	19.2
1972	: 55.4	21.5	--	23.0
1973	: 54.5	19.5	0.2	25.8
1974	: 52.5	21.6	.3	25.7
1975	: 42.6	35.3	1.6	20.4
1976	: 41.9	37.7	1.8	18.6
1977	: 34.9	45.2	2.3	17.6
1978	: 40.3	37.0	2.2	20.5
1975-78 average	: 39.9	38.8	2.0	19.3
:				

-- = Negligible.

1/ Primarily meal produced in the European Community from imported soybeans and re-exported.

Sources: Foreign Agriculture Circular (Oilseeds and Products), various issues, Foreign Agricultural Service, United States Department of Agriculture. Trade Yearbook, various issues, Food and Agriculture Organization of the United Nations.

Brazil. Exports of soybeans from Brazil increased from less than 1 percent in the early sixties to about 14 percent in 1975-78. Brazil's emergence as a major soybean exporter can be attributed to a number of policies, the most important of which was a change in 1964 from a general policy of import substitution to one of export promotion. This change allowed previously distorted world price signals to be transmitted to Brazilian producers.

The profitability of soybeans relative to alternative crops became apparent to producers in the late sixties and the area

planted in soybeans rapidly expanded. High support prices for wheat, which was double-cropped with soybeans, also spurred the expansion. Now, double-cropping is on the decline because the higher yields from single-cropped soybeans more than compensate for the foregone wheat production at current prices.

Favorable tax treatment for meal and oil relative to bean exports led Brazil to specialize in the export of these two soybean products rather than in the trade of raw soybeans. As a result, Brazilian soybean exports peaked in 1976 while meal and oil exports have continued to grow, with Brazilian meal surpassing U.S. exports in 1977.

Table 3--World soyoil exports: Volume shares of leading exporters

Calendar year	United States	Brazil	China	Argentina	Other <sup>1/</sup>
:	:	:	:	:	:
1960	71.1	--	3.6	--	25.3
1961	69.9	--	.3	--	30.1
1962	81.6	--	.1	--	18.2
1963	79.4	--	.4	--	20.1
1964	79.8	--	.4	--	19.8
1965	79.2	--	.3	--	20.5
1966	75.9	--	.8	--	23.3
1967	76.4	--	.6	--	23.0
1968	72.1	--	.5	--	27.4
1969	61.0	--	.5	--	38.6
1970	60.5	0.3	.2	--	39.1
1971	60.5	.5	.2	--	38.8
1972	53.6	5.4	--	--	41.0
1973	40.7	8.4	--	2.0	48.8
1974	48.0	.1	--	2.4	49.5
1975	26.1	19.4	--	1.5	53.0
1976	28.0	27.3	--	3.5	41.1
1977	36.6	23.7	--	3.4	20.1
1978	35.8	19.4	--	2.5	42.3
1975-78 average:	31.6	22.5	--	2.7	39.2
:					

-- = Negligible.

1/ Primarily soy oil produced in the European Community from imported soybeans and re-exported.

Sources: Foreign Agriculture Circular (Oilseeds and Products), various issues, Foreign Agricultural Service, United States Department of Agriculture. Trade Yearbook, various issues, Food and Agriculture Organization of the United Nations.

Future increases in soybean production will depend on world price levels, because the most easily accessible soybean land is now in cultivation, and yields are not expected to rise quickly. Higher prices would be needed to bring less fertile and more remote areas into production. Increased production, in turn, would require further investments in Brazil's already overburdened transportation and port facilities.

Argentina. As a result of favorable world prices, Argentine soybean production increased from zero to 3 percent of the world market since 1973. Unlike Brazil, Argentina traded in raw beans rather than soybean products. The Argentine Government, to make better use of increased but limited crushing capacity, began paying a rebate on soyoil exports in 1980, but oil and meal exports remain small compared with total soybean trade.

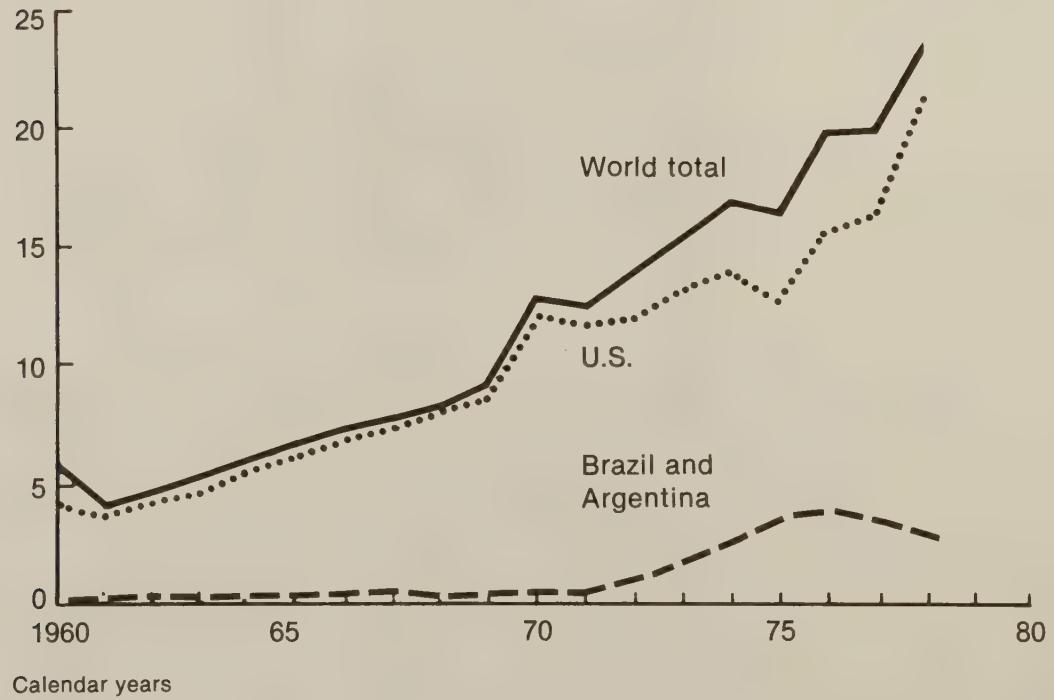
#### Importers

The major soybean importing regions of the world have traditionally been the EC and Japan with roughly 48 percent and 19 percent of the world market, respectively (table 4). Other significant importers include Taiwan, Eastern Europe, and, recently, the Soviet Union.

Figure 1

#### World Raw Soybean Exports

Million metric tons



The EC. Although the EC's share of world soybean imports decreased slightly, from about 50 percent in 1960 to 48 percent in 1975-78, total volume of soybean imports increased greatly in response to the rising demand for livestock products. The EC has no import tariffs or levies on soybeans because, as a part of the General Agreement on Tariffs and Trade negotiated in 1961, the EC agreed to a zero tariff binding on soybeans. Hence, a combination of soybeans, a high protein feed, and manioc (also called cassava), a high-energy feed imported from Thailand, has a price advantage over grains for EC livestock feed. Moreover, vegetable oil imports are taxed, which provides an incentive to crush beans within the EC rather than to import the oil itself.

Table 4--World soybean imports: Volume shares of leading importers

<u>Year</u>	:	<u>EC-9</u>	:	<u>Japan</u>
	:		:	
	:			
	:		<u>Percent</u>	
	:			
1960	:	49.8		21.9
1961	:	50.3		28.7
1962	:	53.6		26.1
1963	:	50.2		29.1
1964	:	51.9		26.2
1965	:	46.3		27.9
1966	:	46.2		28.4
1967	:	45.1		29.1
1968	:	43.6		29.1
1969	:	42.4		27.6
1970	:	42.9		26.5
1971	:	46.0		25.5
1972	:	47.6		24.7
1973	:	48.7		24.9
1974	:	52.0		18.5
1975	:	50.4		20.4
1976	:	46.0		17.8
1977	:	46.4		18.3
1978	:	47.9		18.4
1975-78 average	:	47.7		18.7
	:			

Source: Food and Agriculture Organization of the United Nations, data.

Japan. Japanese soybean imports have declined from a 26-percent level in the early sixties to 19 percent of world soybean trade

in the past few years. There are no direct tariffs or quotas on soybean imports. However, heavy tariffs and strict quotas on livestock imports indirectly encourage imports of soybeans, which are an important input in formula feed production necessary in meeting Japan's growing demand for meat.

Factors Affecting Future U.S. Soybean Exports

The continued expansion of world soybean trade and the maintenance of the current U.S. market share will depend on trends and policies in four areas.

- Area expansion. If foreign soybean producers, particularly in Brazil, Argentina, and Paraguay, can substantially expand the area planted in soybeans, the U.S. share of world exports may be further eroded. Area expansion by the United States is possible, but it may come at the expense of corn or cotton production.
- Exchange rates. The expansion of world soybean trade is partly a function of the rate of devaluation of the U.S. dollar relative to the currencies of major importers. A lower valued dollar would mean cheaper soybeans to Japan and the EC and would stimulate larger purchases.
- Expansion of trade in other oilseeds. New varieties of other oilseeds and palm kernels could make what are now imperfect soybean substitutes far more acceptable by lowering prices or eliminating undesirable qualities. 4/
- Change in trade policies. The major soybean importers, Japan and the EC, currently have no significant restrictions on soybean imports. A more restrictive trade policy would have a major impact on the world soybean market. No such change appears likely for Japan, but sentiment is growing for trade restrictions on soybeans among some EC farm groups.

Maintaining the U.S. share of the world market is important but will not be critical as long as total foreign demand for soybean imports continues to expand. And, a strong world soybean market

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4/ For example, new high-yielding hybrid sunflower seeds have lowered sunflower production costs relative to soybeans and other oilseeds. Another possible future advance of significance would be the lowering of the erucic acid (an unsaturated fatty acid unique to rapeseed) content in rapeseed. This would make rapeseed meal more acceptable as a livestock feed and, hence, more competitive with soybean meal.

is likely to continue in the face of growing demand for livestock products in developed, centrally planned, and middle-income developing countries.

#### COARSE GRAINS

Corn, barley, and grain sorghum, the major coarse grains traded, can all be used for livestock feeds. Corn accounted for about 70 percent of all coarse grains traded on international markets in 1979, followed by barley (16 percent) and grain sorghum (12 percent).

The United States responded to the high grain prices of the early seventies by bringing a large area into grain production, much of which was devoted to corn. Many of the other coarse grains exporters--South Africa, Thailand, France, and Australia--lacked additional area for expansion, while Argentina was constrained by inadequate transportation and port systems. Canada suffered from limitations in not only its corn area but also its marketing system. The United States, therefore, was able to increase its share of the world coarse grains market from 45 percent in 1960 to 67 percent in 1979, whereas, the combined share of major competitors fell from 33 to 26 percent in the same timespan.

World exports of coarse grains, like those of soybeans, have expanded sharply, from about 25 to almost 110 million metric tons in the past 20 years (fig. 2). Rising incomes in Japan, Western Europe, and middle-income developing countries, along with policies to increase consumption of livestock products in the Soviet Union and Eastern Europe, were major forces in boosting demand.

The importance of corn in world coarse grains trade warrants separate discussion from other coarse grains. The following market analysis consequently includes one subsection for corn and a second one for other coarse grains. The shares calculated for "other coarse grains" in the second subsection below include barley, grain sorghum, oats, rye, and millet. Only barley and grain sorghum are discussed explicitly since the latter three grains are not significant in world trade.

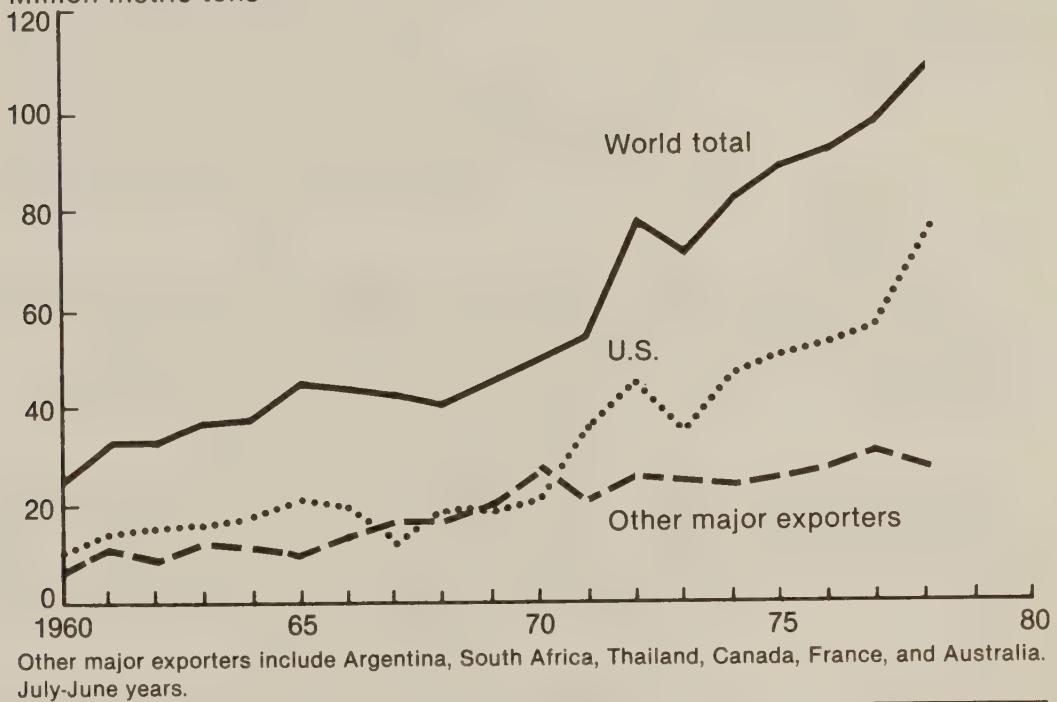
#### Corn Exporters

Corn accounted for more than 70 percent of world coarse grains exports in 1979/80. This percentage represents a substantial increase over its 55-percent share of that market in 1960. The United States has increased its share of the world corn market from around 50 percent in the sixties to more than 75 percent in 1979 while major U.S. competitors have increased their export volume, but have lost part of their market share to the United States (table 5). In the 5-year period ending in 1979, Argentina, South Africa, and Thailand had market shares of 7, 4,

Figure 2

**World Coarse Grains Exports**

Million metric tons



and 3 percent, respectively--about half of their combined level in the early sixties. Thus, the United States has been able to capture most of the increases in the rising demand for feed grains--particularly corn--over the last 9 years while its competitors have been unable to keep pace with the expanding market.

An examination of the factors which affect the exports of major U.S. competitors in the world market will place recent changes in perspective.

Argentina. Argentine corn exports have increased since the sixties. However, U.S. exports have increased at a faster rate, which accounts for the decline in the Argentine share from 13 percent in the early sixties to 7 percent in 1975-79. More rapid export growth might have resulted if Argentine policies had permitted the clear transmission of world prices as an incentive to farmers. The National Grain Board (*Junta Nacional de Granos*) is the agency through which Argentine grain policy has been implemented since 1960. The role of the Board has been confined to buying surplus grain at government-set minimum prices except during 1973-76, when the Peron Government made

Table 5--World corn exports: Volume shares of leading exporters

Year ending June 30	United States	Argentina	South Africa	Thailand
:	:			
1960	50.2	15.1	8.3	4.1
1961	54.1	12.3	9.9	3.2
1962	52.6	13.8	13.6	3.7
1963	51.8	11.0	11.6	4.1
1964	56.1	14.8	3.8	3.8
1965	62.1	10.7	1.6	4.1
1966	48.7	19.7	3.2	4.6
1967	51.8	11.3	11.1	4.3
1968	46.3	14.2	7.7	4.6
1969	55.5	15.2	3.8	5.3
1970	43.9	17.9	3.1	5.6
1971	49.7	14.3	8.4	6.3
1972	68.7	6.7	7.6	2.5
1973	67.3	9.9	.7	4.1
1974	58.9	12.1	6.9	4.1
1975	70.1	4.6	2.4	4.2
1976	70.8	7.3	4.5	3.5
1977	72.3	9.6	4.4	2.0
1978	73.9	9.6	3.9	3.0
1979 1/	79.2	6.2	3.2	2.7
1975-79 average	73.3	7.4	3.6	3.1
:				

1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

the Board the sole legal purchaser of Argentine grain. During that period, the Board fixed prices well below world market levels. Following a change of government in 1976, many of the measures which had tended to stifle agricultural exports were revised, which resulted in an increase in Argentine exports. Producer prices of corn are currently supported by the Board at 80 percent of the world price f.o.b. (free on board) at Argentine ports, which allows changes in world market conditions to be transmitted to producers.

Argentina's ability to expand corn exports is constrained by underdeveloped transportation and port systems. Furthermore, a lack of storage capacity encourages the export of the total available supply soon after harvest. Argentina has recently received a World Bank loan for construction of new facilities.

South Africa. The South African share of the world corn market has been highly variable because of recurrent droughts which have often resulted in government restrictions on corn exports to maintain favorable consumer prices. South Africa's average share has declined from more than 10 percent in the early sixties to the 1975-79 average of 4 percent. Producer prices in the principal corn-producing region of South Africa, where 95 percent of their corn is grown, are set by the Maize Board. The Board is responsible for distribution within the country and shipment to ports for export.

Long-term growth in South Africa's share of the world corn market largely depends on yield increases because of the limited availability of new land for cultivation. The future competitiveness of South African corn on world markets will depend on the willingness of the government to continue to sell corn for export at a loss as producer prices are currently well above world market levels.

Thailand. The Thai share of world corn exports averaged 3 percent in 1975-79 and reflects a 3-percent decline from its maximum level in 1971. Thailand has an open market for corn with no special regulations or incentives for corn production or exports, although the government does negotiate annual bilateral trade agreements for corn exports whenever possible. The recent expansion in Thai corn production resulted from an increase in acreage planted. Future gains in corn production will depend on the availability of fertilizers to increase yields because the prospects of further land expansion are limited.

#### Corn Importers

The world corn import market has changed substantially--particularly since 1971 (table 6). In the early sixties, Western European countries were the primary purchasers, buying 60 to 70 percent of all corn traded internationally. Japan took about 13 percent of imports followed by Eastern Europe with 8 percent, and Africa, Latin America, and Asia (excluding Japan) with less than 3 percent each. The Western European share had fallen to about 39 percent of the market by the late seventies, while Japan and Eastern Europe had increased their shares to 15 and 8 percent, respectively.

The Soviet Union purchased an average of 16 percent of the corn sold on world markets in the last few years, although these purchases were highly variable. Latin American and Asian shares, excluding Japan, climbed to 5 and 10 percent, respectively, because of increased purchases by Mexico, Korea, and Taiwan as these countries developed their livestock industries.

The EC. The EC countries have steadily increased their corn imports for two decades, although their share declined from a high of 70 percent in 1966 to 28 percent in 1975-79. The more rapid increase in import demand in other areas of the world, coupled with the effects of the Common Agricultural Policy (CAP), contributed to this share decline.

The CAP, a comprehensive common agricultural pricing and tariff policy for designated commodities, was introduced in 1967. The policy maintains high internal grain prices by preventing any imported grain from selling at a price below that guaranteed to producers within the EC. A variable levy equal to the difference between the cost, insurance, and freight (c.i.f.) price at Rotterdam and the guaranteed internal price prevents world market conditions from being transmitted to internal EC markets as long as world prices are below the internal price.

Table 6--World corn imports: Volume share of leading importers

Year ending June 30	: Western: Europe	: EC-9	: Soviet Japan	: Union	Asia, excl. Japan	: Eastern: Europe	Latin America	Africa
:	:	:	:	:	:	:	:	:
:	:	:			<u>Percent</u>			
1960	: 67.9	60.2	12.9	1.0	2.9	4.3	1.4	0.7
1961	: 62.4	57.2	11.7	.1	3.3	6.9	1.4	3.7
1962	: 67.1	57.7	12.3	.0	4.3	4.7	2.3	1.5
1963	: 67.7	57.8	13.8	.6	2.7	6.2	2.5	2.6
1964	: 62.1	53.6	13.8	.0	1.9	5.3	1.7	1.7
1965	: 68.4	55.5	10.5	.1	1.6	4.3	1.0	2.8
1966	: 70.9	57.9	14.8	.7	2.5	2.6	1.0	1.8
1967	: 67.5	55.2	16.3	1.3	3.5	3.8	1.5	1.5
1968	: 63.4	51.2	19.0	1.6	3.0	4.3	2.7	.4
1969	: 61.0	48.7	21.1	.4	4.3	2.6	3.1	2.9
1970	: 60.7	50.7	17.4	.9	4.8	5.2	4.1	1.4
1971	: 57.2	47.0	16.2	6.3	6.1	4.2	2.0	1.3
1972	: 48.0	37.8	16.2	9.6	8.9	6.1	4.5	1.0
1973	: 47.5	35.8	15.7	9.2	9.1	3.7	5.2	2.1
1974	: 51.5	37.7	15.2	4.5	6.2	8.2	6.4	2.3
1975	: 40.1	30.1	13.9	21.7	6.6	8.5	4.0	2.1
1976	: 50.2	38.9	15.3	8.6	7.5	8.4	4.6	2.1
1977	: 39.8	26.8	16.0	17.8	8.3	7.1	5.2	2.4
1978	: 35.9	24.5	16.1	14.1	14.3	7.6	6.3	2.4
1979 1/	: 31.0	21.0	14.8	18.7	10.8	11.7	7.2	2.7
1975-79	:							
average	: 39.4	38.3	15.4	16.2	9.5	8.4	5.5	2.3
:								

1/ Preliminary. Source: Foreign Agricultural Service, United States Department of Agriculture, data.

On the rare occasions when world prices have exceeded threshold prices (as in 1973), other policy measures, such as embargoes and export taxes, have been undertaken by the EC to block internal price increases. These high domestic grain prices have stimulated production increases, stifled the growth in demand for corn and other feed grains, and encouraged the substitution of soybean meal combined with nongrain energy feeds, such as manioc, for corn.

Japan. The Japanese share of the world corn import market has risen from 13 to 15 percent since 1960. Japan has no producer price guarantee for corn as Japanese corn production is insignificant. Corn for feed use is imported duty free, while corn for industrial use is subject to tariff quotas. The absence of import restrictions on corn has permitted the rapid growth of its use in the expanding Japanese livestock industry. Continued growth of the Japanese market for corn imports may be affected by recent policy measures to stimulate the feed use of rice. Japan has a surplus of rice.

Eastern Europe. Together, the eight separate centrally planned economies of Eastern Europe have increased their share of world corn imports from 5 percent in the early sixties to a current share of 8 percent. These countries all have similar policies affecting corn trade and, with the exception of Yugoslavia, have chosen policies which subsidize consumer purchases of food, particularly meat. Consumer food prices in Eastern European countries are fixed at levels well below the actual cost of production. Producer prices are less rigid, but frequent imbalances occur between grain and livestock prices. Since 1977, plans have emphasized faster growth in the crops sector relative to the livestock sector because of a growing imbalance in favor of the latter and the inability to purchase grain from the Soviet Union. Eastern European corn imports should expand more slowly in the future as a result.

Grains are traded exclusively by government trading agencies which have a strong preference for trade among Eastern European countries and with the Soviet Union because of a lack of foreign exchange. Yet, the commitment to expand the supply of livestock products at subsidized prices, combined with the difficulty of sharply expanding grain output, has made some increases in grain imports from the West probable, although Eastern Europe's share itself may decline.

Soviet Union. Since the Soviet Union became a heavy importer of grain in 1972, its purchases on the world market and its market share have been highly variable. Soviet imports averaged 15 percent of the world market in 1975-79, with a high of 22 percent in 1975 and a low of 9 percent in 1976. The sudden

increase in the Soviet demand for grain imports in the early seventies arose from a commitment by the Soviet Government to raise per capita protein intake by increasing meat consumption. This required expanding livestock herds beyond the level which could be sustained by Soviet grain production. Erratic weather conditions, coupled with the already unwieldy problems of centrally planned agriculture, led to the decision to import quantities of grain sufficient to meet livestock production goals.

Corn has become the major imported feedstuff for the Soviet Union. Policy objectives of the Soviet Union currently require continued dependence on foreign sources for adequate corn supplies, although the level of import demand will vary with the size of the Soviet wheat crop.

#### Exporters of Other Coarse Grains

The United States is the leading exporter of the combined remaining coarse grains (roughly 26 percent of the market in recent years), followed by Argentina, Canada, France, and Australia with 14, 14, 13, and 10 percent, respectively (table 7). 5/

Barley is the primary coarse grain export of Canada, Australia, and France, whereas, grain sorghum is second to corn as a coarse grain export in the United States and Argentina. Trade in both barley and sorghum has expanded in the past 10 years but at a much slower rate than the expansion of corn exports. As a result, both grains have declined in importance as a share of the world coarse grain market. Policies which insulate domestic producers in many of these countries from world supply and demand conditions diminish the producer response to changes in world prices.

Argentina. The Argentine world market share has increased from an average of 10 percent in the sixties to 14 percent in the past 5 years. Policies affecting grain sorghum are executed by the National Grain Board and are essentially the same as its corn policies. Expansion of Argentina's sorghum exports are subject to the same storage and transportation limitations as corn exports.

Canada. The Canadian share of the coarse grains market (excluding corn) increased from 7 percent in the early sixties to an average of 14 percent in 1975-79. All Canadian barley

5/ As a group, EC members actually have gross exports which account for 26 percent of the market, but much of this is shipped to other members. Over the past 5 years, the EC has at times been a net exporter and at others a net importer of barley.

Table 7--World coarse grains exports excluding corn : Volume shares of leading exporters

Year ending June 30	United States	Canada	Argentina	France	Australia
:	:	:	:	:	:
1960	: 38.9	8.2	6.5	9.3	9.5
1961	: 30.9	7.4	10.4	11.5	7.7
1962	: 42.9	6.0	5.1	8.6	4.9
1963	: 31.7	9.2	10.9	16.8	5.2
1964	: 33.4	7.5	13.9	16.6	5.4
1965	: 46.3	6.5	5.5	10.6	2.7
1966	: 46.4	7.2	9.4	10.9	4.8
1967	: 35.3	8.4	6.9	19.0	2.5
1968	: 21.9	4.1	12.8	27.2	6.2
1969	: 21.3	8.7	11.0	24.2	5.7
1970	: 29.0	19.2	10.9	10.3	10.1
1971	: 18.2	20.7	6.5	19.2	14.2
1972	: 29.8	18.7	6.5	18.1	7.2
1973	: 35.0	10.4	12.3	19.5	7.0
1974	: 26.4	12.4	12.1	13.1	14.2
1975	: 25.6	17.9	10.5	13.4	11.9
1976	: 27.9	15.0	17.4	7.7	11.0
1977	: 24.1	11.6	17.2	14.8	6.6
1978	: 20.1	13.0	16.9	16.2	8.8
1979 1/	: 32.9	14.8	9.7	14.0	11.8
1975-79	:				
average	: 26.1	14.4	14.3	13.2	10.1
:					

<sup>1/</sup> Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

sold on world markets is handled by the Canadian Wheat Board (CWB) which acts as an agent for producers. It makes an initial payment to producers upon delivery of their barley to the Board. After the year's crop has been sold, the proceeds are pooled, and the Board's expenses are deducted along with the amount paid out in initial payments. The remaining net proceeds are then distributed to producers as a final payment. This system tends to slow the transmission of world price changes to producers and results in a delayed Canadian response to a change in world coarse grains demand. Canadian barley exports are severely limited by the ability to move grain to ports. Further increases in Canada's market share are likely to come only as a result of the improvement in the transportation system or at the expense of wheat exports.

France. French barley exports have been erratic, reaching a peak of 27 percent of the world market for coarse grains other than corn in 1968 and falling to an average of 13 percent of the market in 1975-79. The price support mechanisms for France are the same as those described earlier for EC corn imports.

However, because EC barley prices are well above world market levels, the Community provides an export subsidy to cover the difference between the cost of exporting barley and world price levels. Any barley France is unable to sell to other EC members under the variable levy protection umbrella can be sold on the world market at prevailing world prices.

Australia. Australia's share of the world coarse grains market excluding corn has been variable because of the effect of recurrent droughts on barley production. Australian barley exports now average 10 percent of the world coarse grains market excluding corn, an increase of about 5 percent over the levels of the late sixties. Much of Australia's barley production is governed by state marketing boards that operate in much the same manner as the CWB. An initial payment is made to producers upon delivery followed by a final payment from the net pooled proceeds from the sale of the crop.

#### Importers of Other Coarse Grains

Based on the past 5 years, the major importing regions of the world for coarse grains other than corn are Western Europe (35 percent), Asia (29 percent), and Eastern Europe (14 percent) as shown in table 8. The nine EC countries (27 percent) and Japan (25 percent) account for the major portion of the Western European and Asian imports, respectively.

Barley constitutes roughly 70 percent of the EC's gross imports of other coarse grains, whereas, grain sorghum constitutes about the same proportion of Japanese imports. Eastern Europe primarily imports feed barley from Western Europe, while Western Europe buys brewing barley from Eastern Europe.

The EC. The bulk of EC barley imports are intra-EC trade, although brewing barley is imported from outside sources. The EC share of the world's other coarse grains imports (including intra-EC trade) has declined from 56 percent in 1960 to an average of 27 percent currently. Barley production and imports are subject to the same general policy framework as corn. The high CAP target prices appear to have stimulated barley production, and hence greater self-sufficiency, in each member country. This has diminished the need for trade and caused a decline in the EC's market share.

Japan. As with corn, grain sorghum imports enter Japan without government interference. Barley, however, is produced

Table 8--World coarse grains imports excluding corn :  
Volume shares of leading importers

Year ending June 30	Western Europe	EC-9	Japan	Asia, excl. Japan	Eastern Europe
:					
<u>Percent</u>					
1960	66.3	55.8	1.5	7.6	9.6
1961	63.8	55.6	2.3	7.8	11.6
1962	69.6	57.8	4.5	2.6	16.2
1963	56.9	45.4	10.8	5.8	17.5
1964	59.8	47.4	13.7	3.5	9.8
1965	56.7	45.2	12.8	6.6	14.0
1966	53.7	40.3	18.6	12.1	7.3
1967	54.0	43.1	21.8	10.0	9.5
1968	51.3	42.8	23.5	2.0	10.8
1969	44.9	37.5	26.1	2.5	13.9
1970	51.0	42.1	24.4	1.5	9.8
1971	36.5	29.3	22.1	4.5	15.9
1972	33.7	26.3	23.2	5.8	10.4
1973	37.6	28.9	21.5	6.2	7.0
1974	37.9	30.3	25.5	5.0	11.8
1975	39.2	31.7	21.5	4.6	11.3
1976	42.8	34.7	24.9	2.6	14.5
1977	34.1	25.4	26.8	4.2	16.1
1978	28.5	22.1	25.8	4.8	18.4
1979 1/	27.7	19.9	24.9	4.6	9.7
1975-79	:				
average	34.6	26.8	24.8	4.1	14.0
:					

1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture data.

domestically. It is bought by the Food Agency and resold at prices well above world market prices to protect domestic producers. Therefore, grain sorghum accounts for the major part of Japan's other coarse grains market share which has increased (with the expansion of the Japanese livestock industry) from 2 percent in 1960 to an average of 25 percent in 1975-79.

Eastern Europe. Eastern European import demand for barley, which varies yearly, has averaged 14 percent of the other coarse grains market over the past 20 years. Barley imports depend mainly on available Western European export supplies. Eastern European purchases thus are principally a function of EC policies which promote the production and export of feed barley and make it price competitive with corn.

Factors Affecting Future U.S. Coarse Grains Exports

The United States has been able to expand its share of the world coarse grains market over the last 10 years primarily through increases in its corn exports. The rapid expansion of coarse grains trade in the past decade raises two important questions: (1) Why did this expansion occur? and (2) Why has the United States been able to capture more market growth than its competitors? The previous discussion has provided an explanation of country-specific causes but has not put these causes into perspective with other broader market forces. Major factors influencing the world coarse grains market in the seventies are as follows:

- Dollar devaluation. The devaluation of the dollar in 1971 and the shift to floating exchange rates in 1973 stimulated an increase in demand by lowering the real price of U.S. grain exports to importers--particularly Japan--thus rendering U.S. exports more competitive.
- Expansion of U.S. crop output. The U.S. agricultural sector has had the capacity to expand corn production more rapidly than its competitors.
- Delayed production response of competitors. The marketing boards and pricing mechanisms of U.S. competitors have slowed transmission of world price incentives to their producers, thereby delaying or muting the production response.
- Soviet imports. A large part of the increase in coarse grain import demand resulted from the Soviet Union's decision to import grain to meet the demands of planned livestock herd expansion. The United States captured the major share of this increase because of large available supplies.
- Other demand growth. Rapid growth in real incomes, particularly in centrally planned and middle-income developing countries, has led to a rising demand for meat products for which coarse grains are a major input.

Continued growth in the world coarse grain market depends on some or all of the factors already identified. The expansion in planted area which allowed the United States to rapidly increase grain production in the seventies is not likely to continue in the next decade because of land limitations. Countries with large amounts of uncultivated land, such as Argentina and Brazil, however, may be able to capture a greater share of the world coarse grains market in the eighties if higher world grain prices make expansion feasible.

A second area of concern is U.S.-Soviet trade relations. Suspension of grain sales in January 1980 may stimulate share increases by U.S. competitors or may result in new entrants to the market as the Soviet Union attempts to develop new sources of grain supplies by paying higher prices. Even if the sales suspension is discontinued, the Soviet Union may not regard the United States as a reliable source of large grain supplies. Rising per capita incomes dictate growing coarse grain demand in other areas of the world which may offset reduced Soviet purchases from the United States, although changes in the trade flow pattern should result in higher net transportation costs.

## WHEAT

Both the world wheat market and the world coarse grains market are affected by similar factors. There are, however, two important differences. First, the response of wheat consumption to changes in income and prices is much smaller than the response of coarse grains. Second, wheat production, pricing, and trade around the world are subject to more policy restrictions than are coarse grains. The combination of these factors results in a world wheat market in which adjustments to shifts in supply or demand can only be achieved with relatively larger price movements.

Exporters

Wheat, as a U.S. agricultural export commodity, ranks third in importance to coarse grains and soybeans. The United States is the world's largest wheat exporter, with 41 percent of the export market in the most recent 5-year period (table 9). Other countries with significant wheat shares in world exports are Canada, 18 percent; Australia, 12 percent; France, 11 percent; and Argentina, 5 percent.

The ranking of the five major wheat exporters has not changed appreciably in the past 20 years; however, the size of the country shares has. The U.S. market share had declined to less than 35 percent in the late sixties and early seventies from a high of 42 percent in 1960. The Soviet wheat purchase of 1972/73 was responsible for increasing the U.S. share to a level that exceeded 40 percent. Subsequent increases in U.S. wheat exports have kept pace with the expanding world market and have maintained a constant U.S. share at that level. Both Canadian and Australian market shares have declined slightly since 1972, while the Argentine share has remained about the same. French exports, as a proportion of world wheat trade, have increased by about 5 percentage points since the implementation of the CAP in 1967.

Canada. The Canadian share of the world wheat market has declined from an average of more than 20 percent through the sixties and early seventies to an 18-percent average for the past 5 years. The CWB is the sole marketing agent for wheat

Table 9--World wheat exports: Volume shares of leading exporters

Year ending June 30	United States	Canada	Australia	France	Argentina
:					
:					
:					
1960	: 41.7	21.6	11.6	3.6	4.5
1961	: 40.7	20.6	12.9	3.8	4.9
1962	: 38.9	20.3	10.8	6.7	4.1
1963	: 40.2	26.2	13.5	4.7	4.9
1964	: 36.8	22.6	12.3	8.7	8.1
1965	: 36.9	23.5	8.9	7.5	12.4
1966	: 34.8	25.8	12.0	5.3	5.4
1967	: 37.7	16.7	13.1	7.9	2.6
1968	: 29.8	17.7	10.9	12.3	5.6
1969	: 30.2	16.5	13.5	11.2	3.8
1970	: 34.7	20.1	16.6	5.7	2.8
1971	: 29.9	24.2	15.3	9.9	2.4
1972	: 43.4	21.3	7.7	11.1	4.0
1973	: 44.9	16.8	7.8	12.7	1.6
1974	: 41.0	16.2	12.0	11.7	3.1
1975	: 43.3	16.6	10.8	12.5	4.4
1976	: 38.1	18.8	12.4	9.9	8.2
1977	: 39.6	19.9	13.9	9.4	3.3
1978	: 41.9	17.4	8.7	11.9	4.3
1979 1/	: 41.9	16.1	16.3	10.4	5.2
1975-79	:				
average	: 40.9	17.8	12.5	10.9	4.9
:					

1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

sold on the world market. As with barley, the Board makes an initial payment upon delivery by the producer and a final payment if there are net proceeds after the sale of the crop.

CWB purchasing arrangements were supplemented with a government-instituted "emergency" 1-year program in 1970/71 called Operation LIFT (Lower Inventory For Tomorrow). The program was designed to cut wheat acreage in half and thereby diminish record-level wheat stocks. Delivery quotas were to be used in subsequent years to prevent further massive stock accumulations but the need diminished when world wheat market conditions tightened. Increases in the Canadian share of the world wheat trade are limited by the lack of additional acreage

for cultivation, erratic weather conditions, port capacity, and the limitations of the rail transportation network.

Australia. Recurrent droughts, which have plagued the Australian wheat industry in the past, contributed to a variable share of the world market, although the average share has remained at about 12 percent over the past two decades. The Australian wheat marketing system is similar to Canada's, except that Australian producers are more insulated from changes in the world market by a possible 3- or 4-year time lapse between the initial and final payments by the Australian Wheat Board (AWB).

Another important difference for Australia is the Wheat Price Stabilization Fund. The government sets a guaranteed price each year. If the sum of the initial and final payments by the AWB falls short of the guaranteed price, an amount is withdrawn from the Fund to make up the difference. If the export prices exceed the guaranteed price by a specified margin, the excess proceeds are paid into the Fund until the Fund reaches a maximum level. The AWB borrows funds from the Reserve Bank of Australia to make the initial payment to producers upon delivery of their grain. Limited storage capacity and the cost of financing the bank loan provide strong incentives for a quick sale of wheat exports.

Australia also enacted a system of delivery quotas beginning in the 1969/70 crop year. These quotas were designed to limit production and allow stocks to be drawn down from their extremely high levels. The quotas, as in Canada, were relaxed as market conditions tightened in the early seventies. The simultaneous attempts by both Canada and Australia to reduce wheat stocks prior to the Soviet grain purchase of 1972/73 diminished world wheat supplies available for export, contributed greatly to the subsequent price rise, and allowed the United States to capture the bulk of the new Soviet wheat trade.

France. The CAP has given France a favored position in the European wheat market relative to non-EC member wheat exporters. French wheat exports, as a percent of world trade (including intra-EC trade), subsequently increased from about 7 percent in the early sixties to an average of 11 percent in 1975-79.

French policies for wheat fall under the same policy framework as other EC-produced grain. However, one distinguishing characteristic is the separate pricing of feed wheat and bread wheat. The EC produces an abundance of soft wheat which is less suitable than Canadian and U.S. hard wheats for making bread. Soft wheat is a suitable feed if it is priced competitively with other feed grains. The EC target price for feed wheat is therefore set below the target price for bread wheat at a level

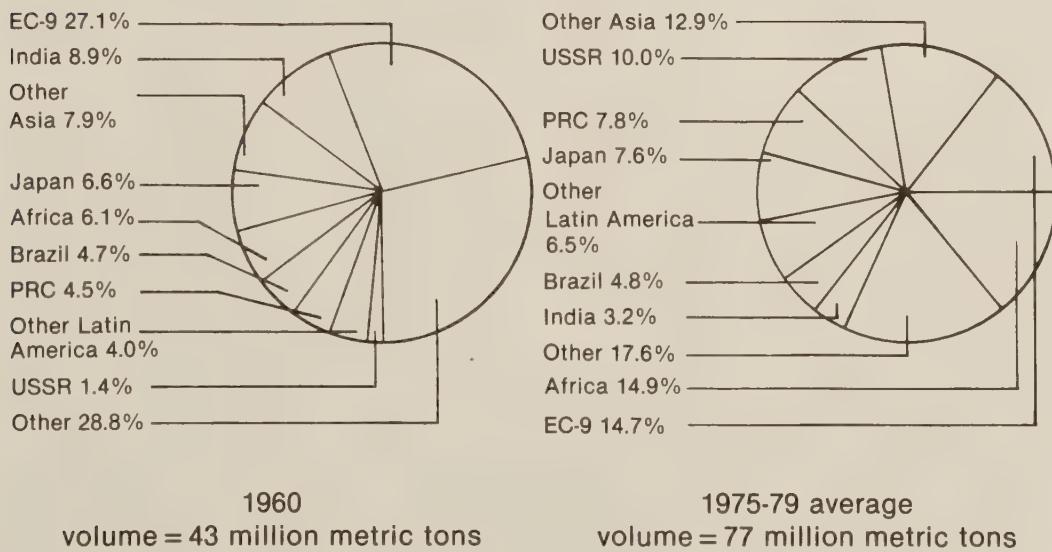
equal to the price for corn and barley. This stimulates the use of soft wheat as a feed while increasing the production of bread wheat. This could result in a decrease in French soft wheat exports to non-EC members, along with a decline in EC coarse grain imports from outside the EC.

Argentina. Argentina's share of the world wheat export market has varied from a high of 12 percent in 1965 to a low of less than 2 percent in 1973. Argentina averaged a 5-percent share of the world market in 1975-79. Currently, policies governing wheat marketing and trade in Argentina are the same as for corn, except that the wheat minimum support price has lately been set independently of the f.o.b. export price. Usually, this price is set at a level below prevailing world market prices. Argentina has the land base for sharply expanding wheat production but, historically, it has lacked the appropriate technological inputs, grain transportation and storage facilities, and the long-term investment climate and price incentives. Developments in these areas will determine the future level of Argentine wheat exports.

#### Importers

Figure 3 depicts the major changes that have occurred in world wheat imports. The EC and India have declined in importance as policies designed to increase wheat production have caused their respective import shares to fall from 27 and 9 percent in 1960 to 15 and 3 percent in 1975-79. However, the Soviet Union and

**Figure 3**  
**World Wheat Import Market**



Africa (particularly Egypt) have increased their shares of the world market from 1 and 2 percent in 1960 to 10 and 6 percent, respectively, in 1975-79. The change in the Soviet share is a result of a policy change to increase grain imports, while the African share increase is a consequence of rising incomes and populations. The market shares of two other major wheat importers--Japan (8 percent) and Brazil (5 percent)--have changed very little since 1960.

Tables 10 and 11 trace the changes in country and continent shares from 1960 to 1979; country shares are discussed below.

The EC. Total wheat imports by EC countries (including intra-EC trade) have declined from about 20 percent of world wheat trade

Table 10--World wheat imports: Volume shares of leading importers by continent

Year ending June 30	Asia	Western Europe	Africa	Latin America	Eastern Europe
:	:				
1960	27.9	32.9	6.1	8.7	13.0
1961	29.2	30.2	8.7	9.0	12.0
1962	35.3	23.7	8.3	10.4	14.4
1963	31.2	19.6	6.0	7.0	10.5
1964	37.1	19.7	7.9	9.1	14.2
1965	34.5	18.7	7.5	7.8	11.4
1966	37.5	19.1	12.3	9.9	9.3
1967	38.6	19.2	11.8	11.9	9.0
1968	35.6	25.9	9.1	11.4	8.6
1969	37.3	23.2	8.9	9.8	8.6
1970	31.5	23.8	11.6	8.7	11.6
1971	32.0	21.4	11.2	10.2	9.6
1972	30.9	18.6	8.7	10.3	5.9
1973	34.6	18.6	11.8	11.5	7.4
1974	38.5	15.5	13.0	9.1	6.3
1975	31.2	17.8	13.0	10.7	7.9
1976	32.1	16.8	14.8	10.5	9.6
1977	32.6	17.7	15.4	10.6	6.3
1978	32.9	17.1	16.1	12.7	5.6
1979 1/	28.8	14.4	15.4	12.3	6.2
1975-79	:				
average	31.5	16.8	14.9	11.4	7.1
:					

1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

Table 11--World wheat imports: Volume shares of leading importers

Year ending:	EC-9 June 30	Soviet Union	Japan	China	Egypt	Brazil	India
:	:						
1960	:	27.1	1.4	6.6	4.5	2.3	4.7
1961	:	24.4	.5	5.7	10.1	3.5	4.7
1962	:	18.8	.5	6.0	11.0	3.9	5.8
1963	:	16.7	17.0	6.8	9.1	3.4	3.4
1964	:	16.6	4.2	6.7	9.6	3.8	4.4
1965	:	16.0	13.5	5.6	9.9	3.7	3.7
1966	:	16.2	5.4	7.4	8.7	4.3	4.6
1967	:	17.0	2.8	7.5	7.7	5.2	5.6
1968	:	23.6	.4	8.5	7.2	3.9	4.8
1969	:	20.5	2.1	8.1	9.4	4.1	3.8
1970	:	21.1	.8	8.4	6.3	4.9	3.0
1971	:	19.3	6.2	8.7	5.2	4.6	2.8
1972	:	17.1	21.5	7.6	7.3	4.2	4.0
1973	:	16.5	6.5	7.7	8.1	4.6	3.5
1974	:	13.8	3.6	7.8	8.2	5.0	2.4
1975	:	16.4	13.9	8.2	3.0	5.2	5.1
1976	:	15.0	7.1	8.5	4.8	6.2	4.5
1977	:	15.7	8.5	7.4	11.0	5.5	4.0
1978	:	14.3	6.9	7.7	10.7	6.4	4.9
1979 1/	:	11.9	13.8	6.4	9.3	6.1	5.4
1975-79	:						
average	:	14.7	10.0	7.6	7.8	5.9	4.8
:							

1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

since the beginning years of the CAP (1967-69) to the current level of 15 percent for 1975-79. Most of the wheat imports are from intra-EC trade. Imports from outside the EC are primarily hard wheats which are not produced in sufficient quantities within the EC. Policies which affect wheat imports and marketing, as indicated earlier, should lead to a smaller EC share of world wheat imports.

Soviet Union. The use of wheat for food in the Soviet Union is a large but stable component of total utilization; whereas, the use of wheat for feed is smaller and highly variable. Given a good-quality crop, the Soviets could meet their food use needs from domestic supplies, but poor weather conditions could result in a short or low-quality crop. The latter would necessitate

substantial hard wheat imports to cover food needs. The inadequate production of soft wheat for feed use is usually covered by corn imports.

Japan. Wheat production and marketing in Japan are controlled because wheat is a relatively close substitute for rice, not because of extensive domestic wheat production. Japanese wheat imports, as a share of the world market, have remained stable at a level of about 8 percent since the sixties. The Japanese Government buys (at fixed producer prices) all domestically produced wheat offered for sale. It sells both domestic and imported wheat to millers and food processors at a resale (wholesale) price that is below the producer price but above the world market price. The government is the sole buyer of imported wheat, which is controlled by quotas. This wheat pricing and marketing system prevents wheat prices from undercutting heavily-supported rice prices. The Japanese share of the world wheat import market should decline in the future as wheat demand in Japan will likely grow more slowly than in developing countries where wheat consumption increases more rapidly with population growth.

The PRC. PRC wheat imports have been stable over the last 20 years at about 8 percent of the world market. Unlike the centrally planned economies of the Soviet Union and Eastern Europe, Chinese wheat import problems originate from an inability to transport wheat from the producing areas of northern China to the population centers along the coast. Wheat imports to these population centers are cheaper and more accessible than Chinese wheat transported from other producing areas. The probability of a large decline in the PRC's share of world wheat imports is small unless there are major improvements in the transportation network.

Egypt. The Egyptian share of world wheat imports has tripled from a level of 2 percent in 1960 to an average of 6 percent over the years 1975-79. Egypt has subsidized bread by fixing low consumer prices. The Egyptian Government is the sole buyer of domestically produced wheat at low producer prices. The result is a tapering off of Egyptian wheat production that is accompanied by an increasing demand and a growing need for imports. Further increases in the Egyptian share of world wheat imports are likely given the present policy framework.

Brazil. Brazil's share of the world wheat market has remained at about 5 percent since the sixties, despite government efforts to stimulate wheat production. The Brazilian Government fixes the producer price of wheat at a level which covers the costs of production and guarantees a profit. As the sole purchaser of wheat, the government was able to finance this deficit until

1972 by buying wheat at world prices and reselling it at the higher mill price. Since 1972 the Brazilian Government has opted to subsidize wheat consumption by reselling wheat to mills at a price below the import price. This system has not been particularly effective in stimulating Brazilian wheat production because soybeans, which are competitive with wheat, are more profitable.

India. India, which imported as much as 14 percent of the world wheat trade in the middle sixties, has been so successful in increasing production that the country reached self-sufficiency in the late seventies. In 1968, the government agreed to purchase all quantities of wheat for sale at a procurement price which was considerably higher than the previous government-fixed minimum price. New high-yielding varieties of wheat were simultaneously introduced along with cheaper irrigation methods. Future wheat exports by India are possible but their lower quality wheat is likely to prevent them from gaining a significant share of the export market.

#### Factors Affecting Future U.S. Wheat Exports

World wheat market changes during the next 5 years are likely to be the result of three factors.

- Rising population and incomes in developing countries. Developing countries should become relatively more important purchasers of wheat on the world market as these countries attempt to meet their growing food demands. Africa, particularly, should increase its share of wheat imports.
- U.S.-Soviet Union relations. Soviet relations with the United States should have an influence on the amount of wheat the Soviet Union imports. If relations improve and the sales suspension is lifted, the Soviets may choose to replace some wheat imports with corn imports. If the suspension remains, the Soviets will probably maintain high levels of feed wheat imports because of limited non-U.S. corn supplies available for export.
- Wheat-corn price ratio. Wheat use in feed rations is extremely price-sensitive. A decrease in the wheat-corn price ratio would make wheat a more economical substitute for corn and increase wheat's import demand.

Without a major shift in country supply or demand, only a gradual change in import market shares is likely with little, if any, change in exporter shares. Exports of hard wheats, which are usually in greater demand, should be a factor which allows the United States to maintain its current market share.

## COTTON

World cotton trade has risen slowly, averaging slightly over 1 percent growth since 1960. Fairly steady growth in world cotton consumption has resulted in a greater demand for world imports, especially from the developing nations that export textiles. Growth in world cotton imports has slowed as the price of synthetic fibers became cheaper than cotton in the seventies. This resulted in cotton's share of world textile mill consumption dropping from 79 percent in 1960 to 47 percent in 1978. Cotton's world production growth has basically matched increases in use, allowing world exports to increase, especially exports from the Soviet Union and the United States.

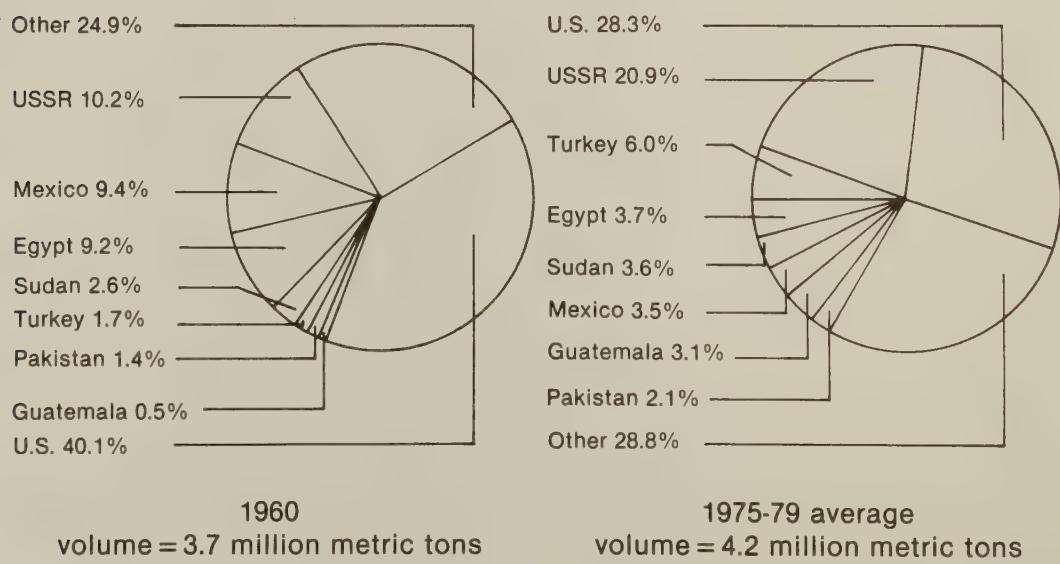
Exporters

Eight nations account for about three-fourths of the world's cotton exports. These nations, ranked in importance by their average share of the world cotton export market from 1975 to 1979 (table 12), are: the United States, the Soviet Union, Turkey, Egypt, Mexico, Sudan, Guatemala, and Pakistan. Since 1960, the total share of the world cotton market has been fairly constant for these nations, although the rankings have changed slightly (fig. 4). The shares of the United States, Mexico, and Egypt have declined whereas, those of the Soviet Union, Turkey, and the Sudan have increased.

United States. The present U.S. share of the world cotton market declined from 40 percent in 1960 to a 1975-79 average of

Figure 4

## World Cotton Export Market



28 percent. The current share represents an increase from 22 percent in 1970. The major reason for the decline is the rapid response of other exporters, especially the Soviet Union and Turkey, to increasing world cotton demand. In the seventies, the United States emphasized market promotion programs, especially with Taiwan and Korea, and given its consistently large export availabilities and high quality of its cotton, the United States has regained some of the share lost earlier. The U.S. share should continue to grow, given continued market promotion, predictions of limited export availabilities in other exporting countries, and forecasts of continued increases in foreign cotton consumption.

Soviet Union. The Soviet Union has doubled its export share (from 10 to 21 percent) since 1960 because of large increases in export supply. The Soviet Union exports slightly more than half

Table 12--World cotton exports: Volume shares of leading exporters

Crop Year	: United States	: Soviet Union	: Turkey	: Egypt	: Mexico	: Sudan	: Guatemala	: Pakistan
:	:	:	:	:	:	:	:	:
:	:			<u>Percent</u>				
:	:							
1960	: 40.1	10.2	1.7	9.2	9.4	2.6	0.5	1.4
1961	: 32.3	10.6	2.9	7.2	9.5	4.1	.7	1.9
1962	: 21.5	9.5	3.6	8.5	11.9	4.9	1.4	4.3
1963	: 32.2	9.3	3.4	7.7	8.0	4.0	1.5	3.8
1964	: 24.9	11.7	4.8	9.2	9.6	2.8	1.7	2.9
1965	: 17.9	13.2	5.7	9.3	12.6	3.4	2.1	2.9
1966	: 26.5	13.2	6.0	7.8	8.3	3.7	1.6	3.1
1967	: 24.9	14.3	6.2	6.7	7.6	4.5	1.5	5.1
1968	: 16.6	13.4	5.9	6.4	9.7	5.0	2.2	3.6
1969	: 16.3	12.7	6.7	8.3	7.2	6.1	1.2	2.2
1970	: 22.0	13.8	6.3	7.9	4.5	5.9	1.4	2.7
1971	: 18.1	15.0	8.3	7.3	5.1	5.3	1.7	6.2
1972	: 25.2	15.2	7.1	6.6	4.5	5.2	1.8	3.9
1973	: 31.3	17.2	5.1	6.1	3.9	3.7	2.3	1.0
1974	: 22.6	20.5	3.4	5.1	5.1	3.3	2.7	6.1
1975	: 17.3	20.4	11.3	4.1	2.8	5.7	2.3	2.2
1976	: 27.2	24.4	3.3	3.4	3.1	3.4	3.1	.4
1977	: 28.7	21.8	6.4	3.5	3.1	3.6	3.2	2.5
1978	: 31.9	19.2	5.0	3.6	4.7	4.2	3.6	1.3
1979 1/	: 36.2	18.7	3.8	3.8	3.8	2.9	3.0	4.1
1975-79	:							
average	: 28.3	20.9	6.0	3.7	3.5	3.6	3.1	2.1
:								

1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

its cotton to Eastern Europe, but during the seventies the share of total Soviet exports going to non-Communist nations increased. Poland, France, and Japan are the largest Soviet markets. Given plans for increased cotton production and the importance of cotton exports as a source of foreign exchange, the Soviet share will probably increase.

Turkey. Turkey has increased its market share because of substantially higher cotton production, which has been exported either as raw cotton or in the form of cotton textiles. Cotton exports increased from 3 percent of the world market in the early sixties to 6 percent in 1975-79. Government policies currently discourage raw cotton exports by holding export prices below domestic prices. The government's goal is to shift more cotton into textile exports to earn a higher value-added price. Increased cotton production is planned, however, and even if cotton textile exports rise, Turkey's share of raw cotton exports may increase or remain stable.

Egypt. Egypt's export share declined from an average of 6 percent in the late sixties to a 1975-79 share of 4 percent by reason of a rapidly increasing domestic demand for cotton textiles. Land area is limited in Egypt and, given pressure for increased food production, cotton production has grown slowly since the mid-seventies while consumption has increased rapidly. These trends are expected to continue, and Egypt's share of world cotton exports is expected to decline in the future.

Mexico. Like Egypt, Mexico's rapidly growing population and income have increased domestic demand for cotton textiles, whereas, land constraints have limited cotton production. Hence, Mexico's share declined from a high of nearly 13 percent in 1965 to an average of 4 percent in 1975-79 and should continue to decline, especially as demand intensifies for increased food production.

Sudan. The Sudanese share of the world cotton market increased from 1960 to 1970 but has declined slightly since then and currently (1975-79) stands at 4 percent. The Sudan, using Arab development aid, has expanded its cotton cropland since 1960 and future expansion is likely. Cotton exports, an important source of foreign exchange, should increase, although the Sudan's share of the world market may stay constant or even decline.

Guatemala. Guatemala's share of the world market increased from less than 1 percent in 1960 to 3 percent in the late seventies owing to rapid increases in cotton area planted and yields. Land expansion for cotton is limited, however, and yields are already the highest in the world. Therefore, production is

expected to increase only slightly, and this could result in a decline in Guatemala's share of world cotton exports.

Pakistan. Cotton production fluctuates widely in Pakistan. Pakistan's share of world cotton exports has been as high as 6 percent in 1971 and as low as 0.4 percent in 1976. Land area is fairly limited in Pakistan and predictions of modest increases in production and continued growth in domestic consumption may keep the country's future export share nearly constant.

#### Importers

Eight nations have increased their share of the world cotton market since 1960 and now account for about three-fifths of the world's cotton imports (table 13). Major changes in the rankings of major cotton importers since the sixties include increasing market shares for the Asian nations (The PRC, South Korea, Taiwan, and Hong Kong) while the European countries

Table 13--World cotton imports: Volume shares of leading importers

Crop year	Japan	PRC	South Korea	Taiwan	Hong Kong	EC-9	France	Italy	Germany
:	:	:	:	:	:	:	:	:	:
:	:	:	:	:	:	Percent			
1960	20.4	1.7	1.2	1.2	2.9	34.0	8.1	5.7	2.7
1961	17.9	1.3	1.6	1.6	2.9	33.2	7.6	6.3	3.0
1962	18.6	2.4	2.0	1.5	3.4	33.0	7.8	6.4	2.8
1963	17.8	4.5	1.5	1.7	3.5	33.2	7.5	5.9	2.7
1964	19.7	4.0	1.8	1.7	3.2	28.6	6.2	4.6	2.6
1965	18.0	2.9	1.9	1.8	3.7	30.5	7.2	5.9	2.5
1966	19.8	2.8	2.0	2.0	4.0	29.3	7.1	6.6	2.2
1967	20.2	1.7	2.3	2.7	4.4	29.2	6.3	5.7	2.2
1968	18.5	1.8	2.7	2.7	4.6	27.7	6.8	5.8	2.2
1969	19.5	2.3	2.7	2.9	4.1	26.8	6.3	6.0	2.5
1970	19.5	2.7	3.0	3.9	4.5	22.9	5.6	4.3	2.4
1971	19.3	3.8	2.8	3.2	3.3	22.9	5.8	4.9	2.3
1972	18.6	9.6	2.3	3.1	3.4	22.2	5.6	4.3	1.9
1973	18.5	8.9	3.9	4.5	4.1	19.3	5.3	4.6	2.1
1974	18.9	4.1	4.2	3.8	4.6	21.8	5.8	4.5	2.4
1975	16.5	4.6	5.2	5.2	6.8	20.4	5.7	4.5	2.0
1976	16.9	3.6	5.1	4.5	5.5	19.5	5.3	4.9	2.2
1977	15.8	8.0	6.6	5.3	5.0	18.1	4.9	4.3	2.1
1978	17.2	11.1	6.5	4.3	4.2	17.1	4.0	5.1	2.2
1979 1/	16.2	16.2	6.2	4.5	4.1	15.3	3.9	4.3	1.9
1975-79:									
average:	16.5	8.3	5.9	4.8	5.1	18.1	4.8	4.6	2.1
:									

1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

(France, Italy, and Germany) have witnessed declining shares. The major reason for these changes is that the Asian countries require large amounts of cotton imports to fuel their growing textile industries, whereas, the European nations have moved heavily into the use of synthetics.

Japan. Japan's share of world cotton imports--currently the world's largest--has declined gradually from 20 percent in 1960 to 17 percent in the past 5 years. The Japanese have moved much of their textile production into synthetics, while per capita consumption of textiles has remained fairly constant since 1970. Also, competition from other Asian textile exporters has resulted recently in large increases in Japan's cotton textile imports, especially from Korea. Currently, raw cotton consumption and imports have declined from the 1970 level. Future prospects are for slow growth in raw cotton imports. The higher price of petroleum, however, will favor greater use of cotton textiles versus oil-based synthetics with a larger share of cotton textiles imported.

The PRC. The PRC has greatly increased its cotton consumption and imports since the late sixties. The country now imports 9 percent of the cotton traded on world markets. Exports of textiles (mostly cotton) now provide 20 percent of PRC's total foreign exchange, and the government has recently designated the textile industry as a key industry for increased investment. Future plans call for increased cotton production but, because substantial growth will be required to meet textile production goals, high levels of imports are likely to continue and the PRC's share of the world cotton market will probably increase. The PRC has substantially increased imports of U.S. cotton because of expanded textile exports to the United States.

South Korea. South Korea has been one of the world's fastest growing cotton importers, with an import share that increased from 1 percent in 1960 to 6 percent in 1975-79. The textile industry accounts for about 30 percent of South Korea's total exports and 20 percent of its gross national product. About 80 percent of South Korea's cotton consumption goes for textile exports, produced by an industry that is one of the world's most modern. The government plans continued increases in cotton textile consumption and exports. Hence, South Korea's share should continue to rise over the next few years.

Taiwan. With textile industry exports feeding Taiwan's rapid growth, the country increased its import share rapidly since 1960 (from 1 percent to 5 percent in 1975-79). However, consumption and imports of cotton textiles have risen slowly over the last few years because of increasing labor costs and competition from other nations, especially the PRC. Taiwan's

future world share may decline even though cotton consumption and imports will probably increase slowly. U.S. export promotion activities, however, may increase the U.S. share of Taiwan's cotton imports.

Hong Kong. Hong Kong's cotton import share, like Taiwan's, has increased since 1960 because of rapid growth in textile exports. However, growth rates in textile exports (and cotton imports) are not expected to remain at current levels because of rising production costs and European import quotas which limit textile export growth. Efforts are underway to improve the quality of textile exports, but due to these two major constraints, Hong Kong's share may decline.

France, Italy, and Germany. France, Italy, and Germany all face problems which mirror the malaise of the European textile industry. Spurred by the decline in the price of synthetics relative to cotton in the late sixties, the EC countries moved more into synthetics and away from cotton (75 percent of all textile production in these nations is now from synthetics). The large increase in the price of oil, coupled with intense competition from lower cost imports (synthetics and cotton), has led to stagnation of the EC's textile industry and to an increase in imports as a percent of the region's domestic textile use. As a result, the shares of the world cotton import market declined in France, Italy, and Germany from a range of 3-8 percent to 2-5 percent in 1975-79.

The EC, in an attempt to minimize future textile industry losses, has concluded many bilateral agreements with textile exporters to restrict imports, especially from Asia. The higher price of oil-based synthetics may aid in increasing cotton consumption slightly. But given the lower cost of textile production outside the EC, the import shares of the world cotton market should continue to decline for these three nations.

#### Factors Affecting Future U.S. Cotton Exports

The future position of the United States in the world cotton market will depend on the level of economic, political, and technological variables in three key areas.

- U.S. export supply. Projected U.S. production, based on current prices, indicates that the United States will continue to have large quantities of cotton for export for the next 5 years.
- Exports of competitors. A number of cotton exporters are developing countries which need to increase food production to feed growing populations. Agricultural land now devoted to cotton production may be switched to food crops as price relationships or policies change.

- Foreign demand for cotton. Increasing income and population, particularly in China, Brazil, Egypt, and South Korea, should result in a higher demand for cotton textiles. An important factor will be the ratio of the cotton price to the price of synthetics. Current trends appear to favor cotton.

The trends in these three areas point to increased world cotton trade in the next few years, with the United States favored to maintain or expand its share.

World rice trade has been growing irregularly since 1960. No single country dominates the export/import rice market because of the importance of varietal differences which affect the taste, texture, and cooking characteristics of rice. For example, people in many Asian countries prefer short-grain rice. Europeans favor long-grain rice. Also, production of certain rice varieties is often country-specific. Therefore, particular exporters can capture particular import markets based on differing rice preferences.

#### Exporters

The United States and Thailand, were the world's major rice exporters, during 1975-79, each holding 21 percent of the market. Approximately 25 percent of U.S. rice exports during the past 5 years were concessional, which allowed the United States to sell rice to countries which would normally purchase different varieties of rice in smaller quantities from other sources. The United States and Thailand are followed by China, Pakistan, and Burma with 12, 9, and 5 percent of the world market, respectively (table 14). These countries together account for about 68 percent of rice exports, with the remaining 32 percent being distributed among such lesser exporters as Argentina, Australia, and Japan. Figure 5 illustrates some changes in the world rice market since 1960.

Thailand. The Thai share of the world rice export market has recovered from the 12-15 percent level held in the late sixties and early seventies to return to an average of 20 percent or more of the market. Thai policy has recently focused on providing adequate quantities of rice at low prices to the domestic population. Cheap-rice shops have been established for individuals to purchase up to a week's supply of rice below retail prices.

The export tax on rice imposed in 1954 to generate revenue was removed in 1971 when the world rice market slackened, but it was re-established in 1973 when rice prices soared. The Thai Government has subsequently adjusted the tax level to account for world market conditions since 1973. The export tax, along with trade embargoes in years of short supplies, discourages

Table 14--World rice exports: Volume shares of leading exporters

Year ending: June 30	United States	Thailand	PRC	Pakistan	Burma	Japan
:	:					
1960	: 12.8	24.1	6.8	1.9	24.3	0
1961	: 16.2	19.6	8.9	2.0	27.0	0
1962	: 16.4	19.4	8.8	1.4	23.5	0
1963	: 16.9	24.4	10.1	2.1	18.2	0
1964	: 19.3	23.6	9.4	1.7	16.6	0
1965	: 17.6	19.7	16.5	2.8	14.7	0
1966	: 24.3	20.0	16.2	1.9	7.4	0
1967	: 26.9	15.6	14.1	1.2	5.1	0
1968	: 25.9	14.3	11.4	1.9	7.9	5.1
1969	: 21.6	13.6	12.6	1.7	8.6	7.6
1970	: 16.3	18.2	17.0	2.3	9.4	10.5
1971	: 22.5	24.2	17.6	3.4	6.0	2.1
1972	: 19.1	10.2	31.2	9.3	1.6	6.2
1973	: 20.4	12.4	29.9	5.7	2.5	3.7
1974	: 26.4	11.9	25.2	6.3	3.7	.1
1975	: 22.6	20.7	16.0	10.5	7.0	0
1976	: 21.8	28.0	9.8	7.3	6.5	.5
1977	: 23.5	16.3	14.2	8.3	3.7	.9
1978	: 18.8	22.4	7.8	11.3	5.0	4.8
1979 1/	: 24.1	18.2	10.0	9.6	5.0	4.6
1975-79	:					
average	: 22.2	21.1	11.6	9.4	5.4	2.2
:						

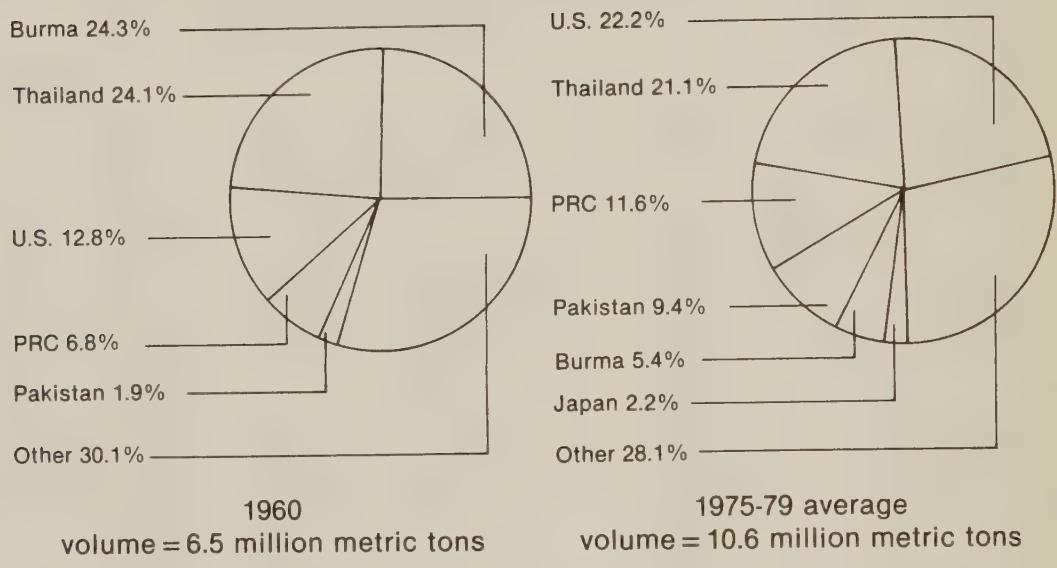
1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

production for export and prevents an increase in the Thai market share. The government has also used embargoes and high export taxes to insure adequate domestic supplies.

A change in Thai rice policies that would permit producers to receive higher prices could have a tremendous influence on rice output. Farmers would have greater incentives to use fertilizers, improve storage facilities (loss to rats is a big problem), and increase double-cropping through the use of irrigation. Thailand, without these policy changes, would make only modest production gains.

Figure 5  
World Rice Export Market



The PRC. The PRC exports rice, subject to domestic availability, on a commercial basis to earn foreign exchange. PRC rice exports, as a share of the world market, have declined from a high of 31 percent in 1972 to a current 12-percent average for 1975-79. Domestic prices are isolated from world prices by the Chinese planning system.

Pakistan. Pakistan's share of the world rice market increased from 2 percent in the early sixties to an average of 9 percent in 1975, mainly because it exports a rice variety (basmati) preferred by people in the Middle East whose rising incomes have increased import demand. The government, which fixes a procurement price to insure a "fair" return to farmers in case the market price falls below a certain level, has encouraged rice production since the early seventies with increases in procurement prices. This has allowed Pakistan to increase its share of the world rice export market.

Burma. Policies oriented towards urban consumers have been responsible for the decline in Burma's share of the world rice market (from 24 percent in the early sixties to an average of 5 percent in 1975-79). Government policies have attempted to maximize the flow of low-cost rice to consumers, but farmers lack the incentive to use fertilizers or new irrigation techniques because of low producer prices. In addition, the

reluctance of the government to accept foreign technology has delayed the introduction of new varieties and production techniques.

Japan. The Japanese did not export rice until 1968 when burgeoning stocks from high producer rice prices led Japan to subsidize rice exports. Since then, Japanese exports have been erratic, depending on the amount of the domestic rice surplus. Japan averaged 2 percent of world rice exports in 1975-79, but its annual share ranged from zero to 5 percent of the world rice trade. Japanese domestic rice policy is likely to result in an increase in Japan's share of the world market in the next few years.

#### Importers

Rice is not a highly traded commodity and imports are widely dispersed throughout the world. Asia, the region with the greatest imports (table 15), accounted for 43 percent of all

Table 15--World rice imports: Volume shares of leading importers

Year ending : June 30 :	Asia :	Africa :	Western : Europe	Latin : America	Eastern : Europe	Indonesia: :	EC-9
:	:	:					
:	:					<u>Percent</u>	
1960	:	67.6	3.1	8.9	2.3	3.1	18.6
1961	:	60.5	8.9	9.2	1.6	3.6	17.2
1962	:	66.5	8.1	7.6	1.8	5.2	15.7
1963	:	62.9	8.6	7.1	2.2	4.1	13.8
1964	:	61.6	10.1	7.6	3.2	4.0	2.8
1965	:	61.9	10.0	8.9	3.2	4.6	4.2
1966	:	63.0	9.3	7.7	2.3	3.8	5.2
1967	:	60.3	9.8	10.2	2.5	4.3	9.8
1968	:	62.1	8.8	8.4	2.3	4.6	8.7
1969	:	66.5	8.8	7.5	1.6	3.0	11.9
1970	:	53.7	10.2	9.6	2.4	4.4	7.2
1971	:	63.1	9.4	8.7	1.8	2.8	9.2
1972	:	60.6	11.3	9.2	2.4	3.4	21.1
1973	:	52.7	11.8	8.9	2.9	3.7	13.6
1974	:	51.7	9.2	9.1	4.3	3.4	8.5
1975	:	49.6	10.5	12.4	3.8	2.9	14.4
1976	:	45.1	16.3	10.5	2.3	3.0	20.3
1977	:	35.9	20.0	13.2	2.2	3.0	20.2
1978	:	40.8	14.3	10.3	9.4	2.5	17.4
1979 1/ 1975-79	:	44.8	16.7	9.5	5.1	2.2	20.7
average	:	43.2	15.6	11.2	4.5	2.7	18.6
	:						

1/ Preliminary.

Source: Foreign Agricultural Service, United States Department of Agriculture, data.

rice traded in the most recent 5-year period. Africa ranks second in importance, purchasing 15 percent of the rice sold on world markets followed by Western Europe, 11 percent; Latin America, 5 percent; and Eastern Europe, 2 percent. The major rice importing countries are Indonesia, 19 percent; the EC, 9 percent; and the Soviet Union, 3 percent.

Indonesia. Indonesian rice imports had been reduced from 18 percent of the world market in 1960 to less than 10 percent of the world market in the late sixties. However, rice imports have increased since 1972, and averaged a 19-percent share in 1975-79. The Indonesian Government has pursued a number of abortive policies in attempts to stimulate rice production while maintaining low consumer rice prices. In the past, the government attempted to achieve the objective of low consumer prices by forcing prices fixed below world market levels on farmers. The result has been lagging production and a growing need to import rice which is not likely to abate.

Africa. Africa is becoming increasingly important in world rice trade as rising incomes have permitted the diversification of diets away from locally-produced foods. African rice purchases in the early sixties accounted for about 8 percent of world rice imports. African imports now constitute 15 percent of the world rice trade. Nigeria has contributed to most of the recent increases with a share which rose from a fraction of world trade in 1970 to an average of 4 percent in 1975-79.

The EC. The EC's share of world rice imports has increased only slightly in the past 20 years from 7 percent in 1960 to 9 percent in 1975-79. The EC's only rice producer is Italy and it does not produce the long-grain variety preferred in the northern member countries. Minimum import prices have been established by the EC for both long- and short-grain rice, the higher price being applied to the former.

#### Factors Affecting Future U.S. Rice Exports

The future structure of the world rice market depends largely on the policies and trends in the major producing and consuming countries. Some of the most important factors will be:

- Thailand's ability to continue production increases. Production gains in the past have been largely the result of expanded acreage; future gains will depend on yield increases which are a function of capital investment and technological development.
- Indonesia's ability to increase rice production. Past Indonesian policies have been consumer oriented. A move

toward a more producer-oriented rice policy would stimulate domestic rice production and decrease the need for imports.

- The continued expansion of quality rice markets in the Middle East. Further growth in Middle East rice import demand depends on a more even redistribution of the region's income.
- P.L. 480 rice exports. Any change in the export provisions of the P.L. 480 program could have a significant influence on the U.S. share of the world rice market.

## CONCLUSIONS

The operation of world agricultural markets is subject to the policies used by individual countries to alter the allocation of resources within domestic markets.

Domestic agricultural policies respond largely to the requirements of either agricultural producers or agricultural product consumers. Policies designed to maintain or improve producer incomes frequently result in high product prices that stimulate production and the imposition of import restrictions or tariffs on the affected commodities and their substitutes. If surpluses develop, export subsidies or incentives are often adopted. The developed economies of Western Europe, North America, and Japan are the primary users of such producer-oriented policies.

Countries that have adopted policies designed to favor consumers usually fix the retail price of one or more basic food items at below-market levels (for example, bread in Egypt, rice in Indonesia, and livestock products in Poland). These countries often attempt to hold down the cost of consumption subsidies by maintaining low producer prices for the affected commodities. The result is pressure for larger imports (or lower exports) because domestic consumption grows faster than production. Such consumer-oriented policies are most prevalent in developing and centrally planned economies.

Both producer- and consumer-oriented policies distort market prices and divert the spatial distribution of global production away from its relatively least-cost location by giving false price signals to producers. Likewise, consumption patterns are also distorted--although probably to a lesser degree--as consumers in various countries adapt their diets to distorted price signals.

The impetus for the rapid increase in U.S. agricultural exports in the last decade has been rapid population growth in the

## CONCLUSIONS

developing countries, and substantial worldwide increases in real per capita income which afforded consumers the means to upgrade the quality of their diets by eating more livestock and poultry products. The United States was able to respond to this demand and increase its market share because it had the capacity to increase output with less of a rise in unit costs. Also contributing to the U.S. position were the price-competitive effects of the depreciation of the dollar relative to the currencies of some of the major importers and the capacity of the U.S. transportation system and port facilities to deliver large quantities of agricultural products to foreign markets.

The United States still has the capacity to further increase its grain and oilseeds exports, and with smaller unit-cost increases than many of its competitors. However, two factors may threaten U.S. ability to compete. One is the fact that agricultural research investments have been lagging in real terms for almost a decade, a trend which has contributed to a recent leveling off of increases in productivity rates. Also, other countries have been substantially increasing research investments and should thereby be able to expand their productivity while reducing future import requirements. Expansion of U.S. agricultural output in the eighties will require research to foster better management of resources and new technological developments to match the export growth of the seventies.

Secondly, the United States must invest more in new energy-saving technologies if it is not to lose its competitive position relative to countries with less energy-intensive agricultures. Transportation, particularly, has a significant impact on U.S. competitiveness. Although the United States holds a competitive advantage in the transportation of bulky grains by reason of cheap water-transport costs, any increase in ocean freight rates may weaken the U.S. position in distant markets.

The future competitiveness of U.S. agricultural exports will depend on effective marketing and the ability to obtain favorable tariff treatment for U.S. products. Of greater significance for the future will be the need of the United States to develop lower cost production technologies and organizational methods. This will require increased commitments to agricultural research and productivity-increasing investments in the land, labor, capital, and energy resources. The efficiency of the U.S. agricultural sector has been the key to its success in world markets, and future efficiency will be the most important single element in sustaining this position.



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